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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/715,041	11/20/2000	Sang-Jun Choi	SEC.741	6853

7590 01/29/2002
JONES VOLENTINE, LLC
SUITE 150
12200 SUNRISE VALLEY DRIVE
RESTON, VA 20191

EXAMINER

CLARKE, YVETTE M

ART UNIT	PAPER NUMBER
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1752

DATE MAILED: 01/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/715,041

Applicant(s)

CHOI ET AL.

Examiner

Yvette M Clarke

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4-5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

This is written in reference to application number 09/715041 filed on November 20, 2000.

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The Information Disclosure Statements filed on April 4, 2001 and June 21, 2001 have been entered and fully considered.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

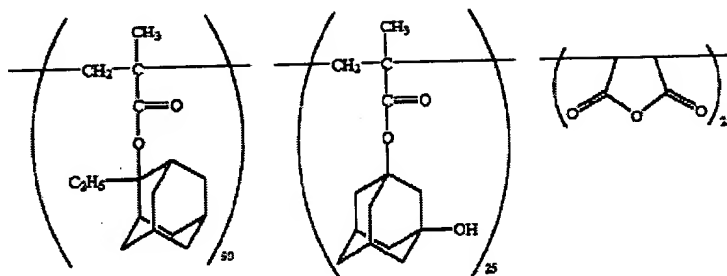
A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

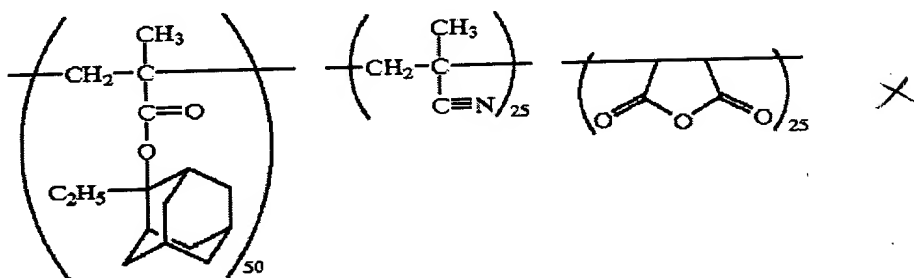
4. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).
5. Claims 1-10 and 12-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Fujishima et al. (US 6239231 B1). Fujishima exemplifies a chemical amplifying type

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positive resist composition comprising a resin D (c. 12, l. 51-c. 13, l. 14) having the given formula:



and resin E (c. 13, l. 15-55) having the given formula:

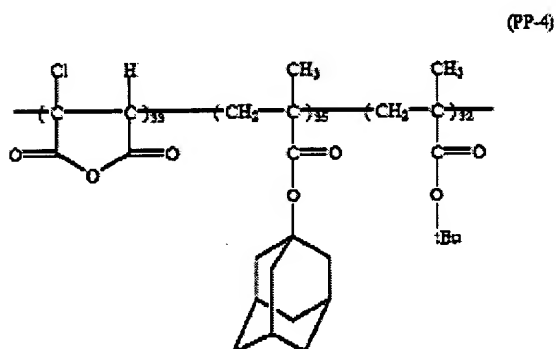


The said resin D has a molecular weight of about 17,000 and resin E has a molecular weight of 3,400. It is the examiner's position that the first monomer meets the limitations of the claimed "m" monomer and the third monomer meets the limitation of the claimed "n" monomer. Fujishima teaches a mole ratio of m:n of 50:25, which gives a m/(m+n) of 0.67 thereby meeting the limitations of instant claim 1. Fujishima further exemplifies resin D and E in a photosensitive composition comprising 10 parts resin; 0.2 parts p-tolyldiphenylsulfonium trifluoromethanesulfonate as the acid generator and 0.015 parts 2,6-diisopropylaniline as a quencher (see ex. 1 and 2; c. 17, l. 30-c. 18, l. 59; see also c. 8, l. 57-67). It is the examiner's position that the p-tolyldiphenylsulfonium

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trifluoromethanesulfonate meets the limitation of a triarylsulfonium salt and that 2,6-diisopropylaniline meets the limitation of a basic compound as set forth by the applicant.

6. Claims 1-3, 5-7 and 9-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Asakawa et al. (US 6280897 B1). Asakawa teaches a photosensitive composition comprising a polymer having a polymer having a repeating segment represented by the general formula (1A) and a compound capable of generating an acid by irradiation of an actinic radiation (abstract). Asakawa exemplifies a high molecular copolymer represented by chemical formula (PP-4), having the structure:



(c. 80, l. 15-34). It is the examiner's position

that either monomer 2 or 3 will meet the limitations of the claimed (meth)acrylate monomer having an acid labile tertiary alkyl group. In the given formula monomers 1 and 2 exemplify a monomeric ratio of 0.52 (35/(33+35)). Thereby meeting the limitations of instant claim 1. The said polymer is admixed with a photoacid generator and a solubility inhibitor to prepare a resist composition (see Table 14). The photoacid generator is triphenylsulfonium trifluoromethanesulfonic acid (TPS-OTf) (see c. 65, l. 59-60), which is structurally equivalent to triphenylsulfonium triflate.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujishima et al. (US 6239231 B1) as applied to claims 1-10 and 12-13 above. Fujishima, as discussed above, exemplifies the use of p-tolyldiphenylsulfonium trifluoromethanesulfonate as the acid generator (see ex. 1 and 2). However, the specification lists several examples of suitable acid generators including diphenyliodonium trifluoromethanesulfonate, bis(t-tert-butylphenyl)iodonium trifluoromethanesulfonate and triphenylsulfonium trifluoromethanesulfonate (c. 6, l. 54-c. 8, l. 7). One of ordinary skill in the art would have been motivated to use any of the listed acid generators in the taught photosensitive composition.

9. Claims 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujishima et al. (US 6239231 B1) as applied to claims 1-10 and 11-13 above, and further in view of Hosaka et al. (US 5405720 A). Fujishima as discussed above teaches a photoresist composition comprising a resin, a photoacid generator, and a quencher. Fujishima further teaches that the composition may also contain, if required, various additives such as sensitizers, surfactants and dyes in small amounts (c. 8, l. 64-67). Hosaka teaches that it is well known in the art that surfactants are conventionally used to improve the coatability and striation of the radiation sensitive composition. Usable

surfactants include nonionic surfactants such as polyoxyethylene ethers, polyethylene glycol dialkyl ethers and fluorine containing surfactants such as MEGAFAC F 171 (c. 6, l. 61-c. 7, l. 28). The surfactant can be used alone or in combination and is usually present in the amount of 1-2% by weight. One of ordinary skill in the art would have been motivated by the teachings of Fujishima to use any conventional surfactant, such as those taught by Hosaka in the taught photoresist composition of Fujishima in order to improve the coatability and striation of the taught composition.

10. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asakawa et al. (US 6280897 B1) as applied to claims 1-3, 5-7 and 9-11 above.

Asakawa, as discussed above, teaches a photosensitive composition comprising a polymer having a polymer having a repeating segment represented by the general formula (1A) and a compound capable of generating an acid by irradiation of an actinic radiation (abstract). Asakawa further teaches that in order to reduce an influence of deactivation caused by adsorption of a basic contamination in the environment a trace amount of basic compound is used. Examples include t-butyl pyridine, diphenylaniline and N-methyldiphenylamine (c. 38, l. 55-c. 39, l. 6). The basic compound is used in the amount of 0.1-50 mole%, which falls within the claimed weight percent of instant claim

13. One of ordinary skill in the art would have been motivated by the teachings of Asakawa to make a photosensitive composition comprising a polymer having a repeating segment represented by the general formula (1A), a compound capable of generating an acid by irradiation of an actinic radiation and a basic compound which is

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used to reduce the influence of deactivation caused by adsorption of a basic contamination in the environment.

11. Claims 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asakawa et al. (US 6280897 B1) as applied to claims 1-3, 5-7 and 9-13 above, and further in view of Kinsho et al. (US 6312867 B1). Asakawa, as discussed above, teaches a photosensitive composition comprising a polymer having a polymer having a repeating segment represented by the general formula (1A) and a compound capable of generating an acid by irradiation of an actinic radiation (abstract). Asakawa further teaches that in order to reduce an influence of deactivation caused by adsorption of a basic contamination in the environment a trace amount of basic compound is used. Examples include t-butyl pyridine, diphenylaniline and N-methyldiphenylamine (c. 38, l. 55-c. 39, l. 6). Kinsho teaches the use of a basic compound to suppress the rate of diffusion and therefore improve resolution. Kinsho teaches that suitable basic compounds include secondary and tertiary aliphatic amines such as diethylamine, triethylamine and triisobutylamine (c. 32, l. 46-c. 34, l. 34). One of ordinary skill in the art would have been motivated to substitute the surfactants of Asakawa for the surfactants of Kinsho in order to suppress the rate of acid diffusion as well as improve image resolution.

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


- Choi et al. (US 2001/0024763A1, US 6277538 B1, GB 257775 A) which teach a photosensitive polymer comprising alkyl vinyl ether.

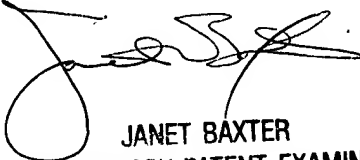
- Kobayashi et al. (US 4986648 A) which teach lens and optical disc base plate obtained from copolymers of norbornyl (meth)acrylate.
 - Nakano et al. (US 5738975 A) which teach a photosensitive resin and method of patterning using the same.
 - Uetani et al. (US 2001/0014428 A1) which teach a chemically amplified positive resist composition.
 - Hasegawa et al. (US 2001/0044071 A1) which teach a novel ester compound, polymer and resist composition.
 - Sato et al. (US 6242153 B1) which teach a positive photoresist composition for far UV ray exposure.
 - Choi et al. (US 6300036 B1, 6171754 B1, US 6103845A) which teach chemically amplified photosensitive compositions.
 - Choi (US 6103450 A, US 6270942 B1), which teaches a photosensitive polymer, dissolution inhibitor and resist composition thereof.
 - Kang et al. (US 6280903 B1, US 6114084 A) which teach a chemically amplified resist composition.
13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvette M Clarke whose telephone number is 703-305-0589. The examiner can normally be reached on Monday-Thursday 7-5:30.
14. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Baxter can be reached on 703-308-2303. The fax phone numbers for

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the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

15. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1193.

ymc 
January 25, 2002


JANET BAXTER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700